



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/385,927	08/30/1999	FRED GRUNER	42390.P7268	9797

7590

01/15/2002

RONALD C CARD
BLAKLEY SOKOLOFF TAYLOR & ZAFMAN LLP
12400 WILSHIRE BOULEVARD 7TH FL
LOS ANGELES, CA 90025

EXAMINER

WOOD, WILLIAM H

ART UNIT

PAPER NUMBER

2183

DATE MAILED: 01/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/385,927

Applicant(s)

GRUNER ET AL.

Examiner

William H. Wood

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 1999, 17 Dec 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.



FILE COPY

Application Filing Date

Date:

Nov 3, 1999

Application Number:

09-385927

Dear Applicant or Attorney of Record:

In response to your request for a corrected Filing Receipt, we are unable to comply with your request because:

- ☐ The correct application number appears on the Filing Receipt. Your postcard included an incorrect application number. Please update your records to reflect the application number on the enclosed Filing Receipt. See MPEP 503.
- ☐ If your application was submitted under 37 CFR 1.10, your filing date should be the "date in" found on the Express Mail label. If there is a discrepancy, a request for a corrected Filing Receipt should be submitted along with a copy of the Express Mail label showing the "date in."
- ☐ No copy of the Express Mail label is enclosed with your request. Please resubmit.
- ☒ The date on the Express Mail label is the date given on the Filing Receipt.
- ☐ The filing date accorded to the application is the date the application met the filing date requirement of 37 CFR 1.53(b) or (c).
- ☐ The continuity filing date for an application cannot be changed with this request. You must request a corrected Filing Receipt for that particular application.
- ☐ Applications submitted under 37 CFR 1.8 are accorded a filing date as of the date the application is received in the Patent and Trademark Office.
- ☐ The date on your return postcard is the same as your Filing Receipt.
- ☐ A petition under 37 CFR 1.10 or 1.53 is needed to correct the filing date.

Any corrections that may need to be done to your Filing Receipt should be directed to:

Assistant Commissioner for Patents
Office of Initial Patent Examination
Customer Service Center
Washington, DC 20231

FILING DATE

DETAILED ACTION

Received Communications

1. Acknowledgement is made of receiving the Response to Notice to File Missing Parts of Application, which was filed on February 22, 2000, and also includes the Petition for Extension of Time.

Acknowledgement is made of receiving the Preliminary Amendment, which was filed on December 17, 1999.

Acknowledgement is made of applicant's request for change of filing date which was received on October 29, 1999. A copy of the office's response to that communiqué has been included in this office action.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: inventor signature of Mike Morrison required.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Method and System for a Two Stage Pipelined Instruction Decode and Alignment Using Previous Instruction Length".

4. The specification contains numerous references to the drawings that are incorrect or lacking in clarity. Some examples include: Page 6, line 20, "zero to fourteen" does not agree with Figure 1, part 102. Page 7, lines 1-2, the address displacement and intermediate data bytes do not agree with Figure 1, parts 110 and 112. Page 10, line 13, DE1 does not clearly refer to anything in Figure 3. Figure 4 has a bracket 402, which is referred to as Length Decode (LEN) on page 11, line 17, and a block part labeled Length Decode. The ambiguity is unnecessary. Also, part 404 of the same figure needs a label. Figure 5, part 306 is referred to on page 12 as containing two buffers yet Figure 5 shows no indication of this. Page 16, line 2 refers to the instruction length decoder as LD, before it has always been referred to as IDL. Finally, page 18, line 11 indicates the "immediate data may be 1,2,4 or 6 bytes", however this is inconsistent with Figure 1, part 112. These errors are misleading and detract from the clarity of the specification/drawing relationship.

Correction is required in pursuit of 35 U.S.C. 113. See also MPEP § 608.02(e).

5. The disclosure is objected to because of the following informalities: Typo on line 11 of page 15, "byte 0" most likely should say "byte B0". "OPIMM" on page 16, line 7 should be placed on line 5 where "opcode-plus-immediate logic unit is first mentioned.

Appropriate correction is required.

Drawings

6. The drawings are objected to because: Figure 2, parts 40 and 41 are reversed.

The specification references 40 as the Control Unit and 41 as the Microcode Sequencer. Also, Figures 5 and 6a contain penciled in modifications which are difficult to read and print. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: Figure 3, part 310, DECODER. Also, Figure 5, part 508, Length Decode not mentioned, however it might be referenced as part 308. This is unclear. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Grochowski et al. (USPN 5,535,347). Grochowski discloses an apparatus using

rotators and shifting to the start of an instruction based upon the length of a previous instruction. Grochowski also discloses these concepts in conjunction with an instruction format that is highly similar to that of the applicant.

In regard to claim 1, Grochowski teaches rotating data bytes of an instruction stream (see column 3, lines 31-37). Grochowski further teaches shifting the data bytes to the start of the instruction (see column 3, lines 38-40). Here rotating to the beginning of the next instruction is clearly representative of "shifting to the start". Grochowski also teaches the above mentioned steps based upon the length of an immediately prior instruction (see column 3, lines 38-39). Grochowski uses the phrase "first instruction" for this purpose. Therefore, Grochowski anticipates claim 1.

In regard to claims 2, Grochowski teaches all of the claimed limitations except for the rotating and shifting using a single clock cycle. However it is inherent that Grochowski's rotating and shifting occurs in a single clock cycle, because Grochowski reveals the state of the art in his "Background" section, which states the need for using a single clock cycle to fetch instructions (see column 1, lines 61-62). Also, one of the objects of Grochowski's invention is to speed computation, in other words, prepare instructions by rotating and shifting in one clock cycle (see column 3, lines 23-25). Therefore, Grochowski anticipates claim 2.

In regard to claim 3, Grochowski teaches method of claim 1 including using a length decode logic unit (see Figure 2, part 16). This unit is for decoding the instruction in order to determine the length. Also refer to column 5, line 50 through column 6, line 1. Therefore, Grochowski anticipates claim 3.

In regard to claim 4, Grochowski inherently teaches the instruction stream passing through alignment buffers prior to rotating (see Figure 2, part 14). It can clearly be seen that prior to entering the rotator, the instruction stream (the words: "32 Bytes of Instruction") has passed through an alignment process. Therefore, Grochowski anticipates claim 4.

In regard to claim 5, Grochowski teaches shifting to start of instruction (see column 3, line 40). Shifting to the beginning of the next instruction is the same as shifting to the exact start of the instruction. Therefore, Grochowski anticipates claim 5.

In regard to claim 6, Grochowski teaches the output of the shifting going to a length decode logic unit (see Figure 2, parts 14 and 16). Part 14 has shifted to the beginning of the instructions being sent to the decode unit, part 16. Therefore, Grochowski anticipates claim 6.

In regard to claim 7, Grochowski teaches rotating data bytes of an instruction stream (see column 3, lines 31-37). Grochowski further teaches shifting the data bytes to the start of the instruction (see column 3, lines 38-40). Here rotating to the beginning of the next instruction is clearly representative of "shifting to the start". Grochowski also teaches the above mentioned steps based upon the length of an immediately prior instruction (see column 3, lines 38-39). Grochowski uses the phrase "first instruction" for this purpose. Therefore, Grochowski anticipates claim 7.

In regard to claims 8, Grochowski teaches all of the claimed limitations except for the rotating and shifting using a single clock cycle. However it is inherent that Grochowski's rotating and shifting occurs in a single clock cycle, because Grochowski

Art Unit: 2183

reveals the state of the art in his "Background" section, which states the need for using a single clock cycle to fetch instructions (see column 1, lines 61-62). Also, one of the objects of Grochowski's invention is to speed computation, in other words, prepare instructions by rotating and shifting in one clock cycle (see column 3, lines 23-25).

Therefore, Grochowski anticipates claim 8.

In regard to claim 9, Grochowski teaches a length vector relating to the immediately prior instruction (see column 7, lines 5-11). Therefore, Grochowski anticipates claim 9.

In regard to claim 10, Grochowski inherently teaches the instruction stream passing through alignment buffers prior to rotating (see Figure 2, part 14). It can clearly be seen that prior to entering the rotator, the instruction stream (the words: "32 Bytes of Instruction") has passed through an alignment process. Therefore, Grochowski anticipates claim 10.

In regard to claim 11, Grochowski teaches rotating data bytes of an instruction stream (see column 3, lines 31-37). Grochowski further teaches shifting the data bytes to the start of the instruction (see column 3, lines 38-40). Here rotating to the beginning of the next instruction is clearly representative of "shifting to the start". Grochowski also teaches the above mentioned steps based upon the length of an immediately prior instruction (see column 3, lines 38-39). Grochowski uses the phrase "first instruction" for this purpose. Therefore, Grochowski anticipates claim 11.

In regard to claim 12, Grochowski teaches a length vector relating to the immediately prior instruction (see column 7, lines 5-11). Therefore, Grochowski anticipates claim 12.

In regard to claim 13, Grochowski teaches rotating data bytes of an instruction stream (see column 3, lines 31-37). Grochowski further teaches shifting the data bytes to the start of the instruction (see column 3, lines 38-40). Here rotating to the beginning of the next instruction is clearly representative of "shifting to the start". Grochowski also teaches the above mentioned steps based upon the length of an immediately prior instruction (see column 3, lines 38-39). Grochowski uses the phrase "first instruction" for this purpose. Therefore, Grochowski anticipates claim 13.

In regard to claim 14, Grochowski teaches determining the length of a current instruction (see column 5, line 66 through column 6, line 5). Grochowski even uses the same instruction type as an example in determining the length of the instruction. Therefore, Grochowski anticipates claim 14.

In regard to claim 15, Grochowski teaches determining instruction length based upon the length of the Opcode and the length of Immediate Data (see Figure 2, parts 16, 13, 18, and 20). In the figure it can be seen that Grochowski has used a combination of opcode and immediate data in determining the length. Therefore, Grochowski anticipates claim 15.

In regard to claim 16, Grochowski teaches determining the length of a current instruction (see column 5, line 66 through column 6, line 5). Grochowski even uses the

same instruction type as an example in determining the length of the instruction.

Therefore, Grochowski anticipates claim 16.

In regard to claim 17, Grochowski teaches determining a memory address displacement length (see Figure 2, parts 16 and 20). It can be seen from the figure the use of address displacement length in part 20. Therefore, Grochowski anticipates claim 17.

In regard to claim 18, Grochowski teaches determining a memory displacement length (see column 6, line 63 through column 7, line 11). Grochowski's instruction set is the same as applicants'. It is inherent in Grochowski's invention to process both one and two byte opcodes in order to determine an anticipatory length of the memory displacement, since both applicant and Grochowski use the same instruction set. Therefore, Grochowski anticipates claim 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grochowski et al. (USPN 5,535,347). Grochowski teaches a method of determining the anticipatory length for one and two byte opcodes (see above 35 U.S.C. 102 Rejections).

Art Unit: 2183

Grochowski does not specifically state multiplexing the one and two byte opcode memory displacement results. However, it is well known to multiplex two results in order to produce one result, as an easy method of choosing between multiple segments of data. Grochowski's invention uses an instruction set, which contains the possibility of having one and two byte opcodes. Therefore, some form of multiplexing would help determine which type of opcode is being used and how to produce the appropriate length based on memory displacement results. Grochowski would multiplex since the invention he has described is producing two possible results as indicated by his instruction set and multiplexing is an easy and well established method of choosing between one result or another. Therefore, claim 19 is obvious.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure as follows. Applicant is reminded that in amending in response to a rejection of claims, the patentable novelty must be clearly shown in view of the state of the art disclosed by the references cited and the objections made. Applicant must also show how the amendments avoid such references and objections. See 37 CFR § 1.111(c).

Grochowski, (USPN 5,581,718), taught the use and design of rotators to select instructions from a stream instructions and then to align those selected instructions.

Brown et al. , (USPN 5,600,806), taught alignment of variable length instructions. One clock cycle using alignment buffers and rotators is emphasized in this patent.

Shang et al. , (USPN 5,724,422), taught finding instruction boundaries in a super-scalar system. The decoding of instructions was done in parallel.

Thusoo et al. , (USPN 5,809,272), taught instruction length decode in a super-scalar system. Thusoo taught using variable length instructions.

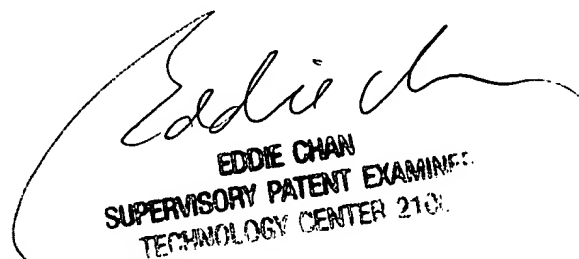
Brown et al. , (USPN 5,537,629), taught variable length instruction decode of instruction prefixes.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William H. Wood whose telephone number is (703)305-3305. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (703)305-9712. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-7239 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

January 3, 2002


EDDIE CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2101